



OFFICE OF RESEARCH & DEVELOPMENT

2012 **R&D**
REVIEW

High-Speed Rail Research & Development (R&D) Broad Agency Announcement (BAA) Program



U.S. Department
of Transportation
**Federal Railroad
Administration**

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Office of Research and Development

Office of Railroad Policy and Development

Topics

- Introduction to the BAA
- Program Status
- Research Highlights
- Industry Outreach and Technology Transfer
- Today's Presentations

Broad Agency Announcement

- **Objective:** To solicit technology research and demonstration projects that support the development of high speed and intercity rail systems in the United States.
- **Funding:** \$25M (FY10 HSR funding)
- **Release Date:** July 28, 2010 (open until Sept 2012, funding dependent)
- **Information:** <http://www.fra.dot.gov/rpd/policy/918.shtml>
- **Contact:** Cam Stuart 202-493-6384, cameron.stuart@dot.gov

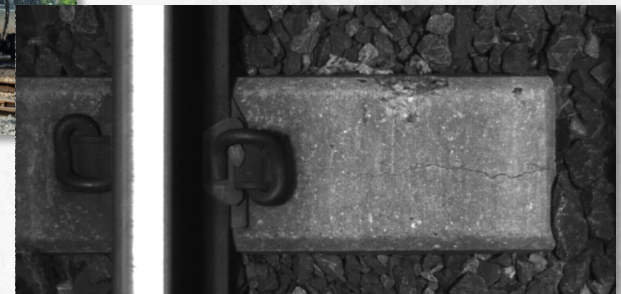
Program Status

- Direct Awards and Grants (7) - \$3.4M
 - Volpe safety research, regulatory support
 - HSR standards, testing strategy, Next Gen equipment development support (DOC)

- BAA Program
 - 27 Awards - \$12M
 - 4 awards in procurement process
 - 4 proposals in review
 - 6 proposals due
 - 3 concept papers in review
 - Track and Structures, Human Factors, Equipment, Train Control
 - Relatively short duration projects with clearly defined deliverables

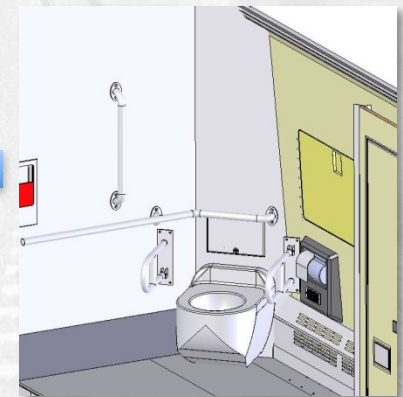
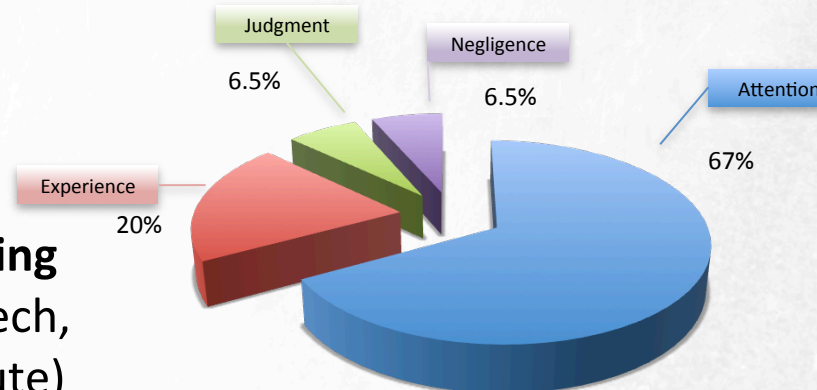
Research Highlights – Concrete Ties

- **Performance-derived specifications** (UIUC, CXT, BNSF, UP, Amtrak)
- **Pre-stress/transfer length optimization** (Kansas State University, CXT)
- **Inspection technologies** (ENSCO/Amtrak)
- **Advanced concrete formulations** (Silica Fume Assoc./UIUC)
- **Freeze/thaw performance** (pending)
- **Internal tie condition measurement** (pending)



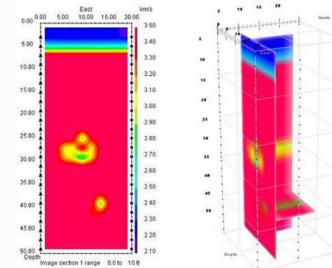
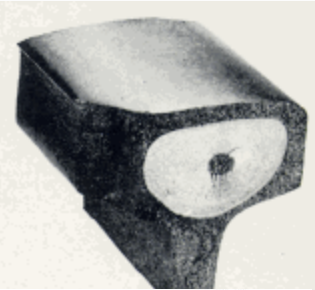
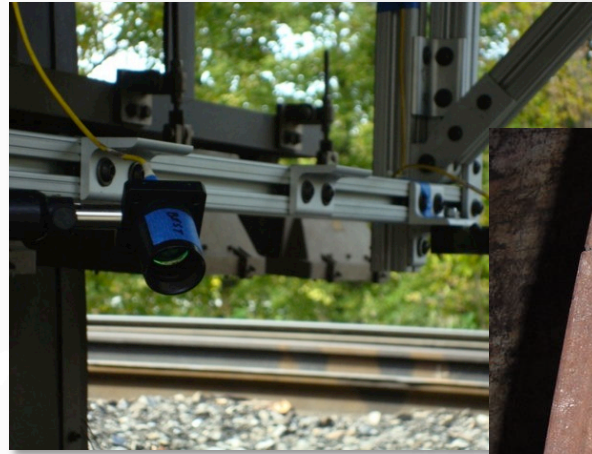
Research Highlights – Human Systems

- **Cognitive Distraction Research** (Veolia, FRA CTIL)
- **High Speed Scheduling Displays** (MIT)
- **Enhance ADA design elements for railcars** (Oregon State Univ., Bombardier)
- **Workforce Development Learning System** (Michigan Tech, Mineta Trans. Institute)



Research Highlights – Advanced Technologies

- **Friction Rail Welding** (Edison Welding Institute)
- **Rail Flaw Tomography** (Avanti Tech)
- **Radar-based Crossing Control** (ByStep, BNSF, Illinois DOT)
- **Non-Contact Velocity Measurement** (Va Tech, NS)
- **Smart Sensors** (IEMC, Amtrak)



Industry Outreach and Technology Transfer

- Industry partners – suppliers and railroads integral to project plans
- Spreading the word
 - FRA publications
 - Pre-cast/Pre-stressed Concrete Institute (PCI)
 - American Railway Engineering of Maintenance-of-Way (AREMA) Annual and Committee meetings
 - Transportation Research Board (TRB)
 - American Society of Mechanical Engineers/Joint Rail Conference (ASME/JRC)



Conclusions

- High response level to BAA – room for more!
- New contacts outside of rail industry – new technologies, fresh approaches
- Excellent support from rail industry
- Lasting benefits
 - Technologies
 - Specifications
 - Educated workforce

Today's Presentations

- **Edison Welding Institute (EWI)**
 - Translational Friction Welding
 - Signal Jumper Welding
 - Rail Base Corrosion Prevention
- **Penn State University Altoona**
 - Dynamic Track Model under Mixed Traffic
- **University of Illinois – Urbana/Champaign (UIUC)**
 - Shared Corridor Technical Challenges and Research Needs
 - Improved Concrete Tie and Fastening Systems
- **Kansas State University**
 - Pre-Stressing Steel and Concrete Variables effect on Transfer Length
- **Virginia Tech University**
 - LIDAR Sensors for Non-Contact Track Speed and Geometry Measurements